

IN SENATE OF THE UNITED STATES.

MAY 10, 1838.

Submitted, and ordered to be printed.

Mr. DAVIS submitted the following

REPORT :

IN SENATE OF THE UNITED STATES,

March 22, 1838.

On motion by Mr. Davis,

Resolved, That the Committee on Commerce be instructed to inquire into the expediency of importing one or more sets of the most approved apparatus now employed on the coast of Europe in the light-houses.

Resolved, That the same committee be instructed to inquire whether a more efficient, safe, and useful system of locating, constructing, lighting, and managing the light-houses necessary for our coasts may not be adopted.

Attest :

ASBURY DICKINS,

Secretary.

The Committee on Commerce have, pursuant to the instructions of the Senate, had under consideration the expediency of introducing the dioptric apparatus for illuminating light-houses ; and, also, the expediency of improving the present organization of the system, and submit the following report :

At the last regular session of Congress provision was made, by a bill in the House of Representatives, for a large number of new light-houses upon the Atlantic and lake coasts. When that bill reached the Committee on Commerce of the Senate, they proposed to amend it by adding a section, which required the Board of Navy Commissioners, before any house should be erected, to cause each site to be examined, and the facts inquired into ; and where no obligation should be found to exist against the proposed light, the erection of the building should go on ; otherwise it was to be suspended, and the facts reported to Congress ; which amendment became a part of the law, and the surveys were accordingly made. By the report of the Navy Board, it appears that they have arrested the erection of no less than thirty one of these proposed houses, for reasons which are assigned by the officers employed in that service, which seem fully to justify the fol-

lowing remarks in the concluding part of the report: "When the great importance in the light-house system is considered, in relation to the safety of human life and of vast amounts of property, to the facilities and rapidity of communication which it gives between different parts of our extensive Atlantic and lake coast, and to the cost of establishing and supporting it, the board would respectfully suggest whether some additional measures may not be desirable for obtaining the necessary information to secure the greatest public advantages from the expenditures which may hereafter be authorized for these purposes."

The committee fully concur with the navy board, that legislation should proceed upon more safe and satisfactory information. Hitherto, Congress has had before it, when proceeding to authorize the erection of new houses, little information beyond the loose, irresponsible statements of petitioners; most, and perhaps all, of whom were, in many instances, unknown; and there is too much reason for believing that those most active in getting up these petitions have been persons interested in their success, that some importance might be given to an unfrequented harbor where they had lands; that they might be made superintendents of the lights, or make sale of the sites, or get a contract, or be benefitted in some other way which had no connexion with the public interest beyond making it subservient to their own. It is time to adopt a course less liable to imposition, and better suited to the importance of maintaining an efficient, useful system of lighting our maritime and lake frontiers. In proportion as the approaches to the coast are perilous, so do the rates of freight and insurance increase, and these are charges upon merchandise which are ultimately borne by the consumer. So, also, are freights higher or lower in proportion to the duration of the voyage. If, therefore, in our interior waters, consisting of the great bays and sounds along the coasts which are filled with coasters and steamers, we keep up lights so that vessels can run in the night, the charges for freight are diminished, and the loss of time in travelling is greatly lessened, and the consumers are again benefitted, for all charges on trade fall on them. In whatever aspect these facilities which give despatch to commerce and navigation are viewed, the great ultimate advantages result to the public. It is, therefore, a high duty in Congress to watch over these improvements, and prevent their being perverted to individual and selfish purposes, and to make them as complete in their character as any reasonable expenditure of public money and the state of science will permit.

In order to place this matter fairly and fully before the Senate, the committee will give a brief account of our own system and that of France, which is believed to be as perfect as that of any European State, and then the difference, both in the mode of illumination and of conducting the systems, will be apparent, and we shall be able to judge how far their experience may be turned to useful account.

The law has hitherto confided the care of light-houses, floating-lights, beacon-lights, &c., of which we now have 238, chiefly to the discretion of the Secretary of the Treasury. It has been usual to add considerably to the number, by law, at every successive session of Congress, and the annual expense of maintaining them for the year preceding the 1st of July last, was \$208,072. The system has, therefore, increased under an irregular course of legislation, accommodating itself gradually to the growth of the country, till it has become in all respects highly important.

The collectors of the customs, to the number of forty-four, have, by the

appointment of the Secretary, (for which there is no legal provision,) the general superintendence, each within a district assigned to him, for which compensation of two and a half per cent. on his disbursements is allowed, not to exceed \$400 to each annually. The keeper assigned to each house or boat derives his authority from the same source.

The houses are generally of stone or brick, and since 1812 have been illuminated by argand lamps, varying in number from four to twenty one; the intensity of the light being greatly increased by the parabolic reflectors of Mr. Lewis, to whom the country is indebted for considerable improvements upon the means before employed in lighting the houses.

There is much reason for believing, however, that while our system (if system it can be called) has, probably, most of the time, been conducted with reasonable care and satisfaction to the public, in most respects, that both the French and English have, by scientific research and improvement, perfected theirs to a considerably higher degree.

The French have taken the lead, and are chiefly indebted to the high attainments and spirited zeal of Mr. Fresnel, who brought into successful practical use the lenticular apparatus, instead of reflectors. This apparatus is called dioptric, while that of reflectors is denominated cat-optic; and where both are combined, as occurs in some instances, it is distinguished as dia-cat-optic.

Of the dioptric lights the French have four classes, which indicate the power or intensity of light. The lenses are arranged in an annular form, and an argand burner, with four concentric wicks, is placed in the centre for the first class. The second has a burner of three concentric wicks, and so on. They appear to be rapidly superseding the reflectors in France, under the conviction that they afford a more brilliant, equal, and economical light.

The general supervision of light-houses, &c., devolves on the Minister of the Interior; but no new light can be established without the concurrent opinion of this minister and the Minister of Marine.

Subordinate is a *Commission des Phares*; the members of which, except the secretary, receive no compensation. It has hitherto consisted of certain civil engineers, employed in the administration of roads and bridges, naval officers, and astronomers, with the late distinguished M. Fresnel as secretary and chief engineer. The design of such a combination is manifestly to bring to the public service the requisite qualifications to select the best sites, to construct the most suitable buildings, and to bring into use the most perfect and scientific apparatus.

The plans for buildings, except in the matter of fitness for lights, are submitted to the general council for the administration of roads and bridges; while all important improvements in lights are submitted to the whole board. The secretary and chief engineer manages the details, and keeps a constant and vigilant eye over the whole. The organization appears to be highly judicious, and the system is, as the committee believe, conducted with great success.

In proof of this, they will bring to view the opinions of several enlightened individuals.

In 1835, Mr. Stevenson, who is understood to be the general superintendent of Scotch lights, was authorized by the commissioners of northern lights to examine the French dioptric lights. He states in his report, that he visited many of them, to which he had unrestrained access; saw

them in full operation ; and was made acquainted with the apparatus by Mr. Fresnel, who answered all his inquiries with the most liberal frankness, and instructed the keepers to do the same.

Upon a full examination under such favorable circumstances, and a free inspection of the manufacture of the apparatus, the result was decidedly favorable to the lenticular plan, because of its power, its admirable diffusion of light, and its economy.

He affirms that any given quantity of oil will give out at least three times as much light with the lenticular apparatus, as with the parabolic reflectors, while it is diffused equally in a plane around the whole horizon, which is a most desirable arrangement, and has never been attained with the reflectors. After going through the details of estimating the annual expense of dioptric and catoptric lights, he uses the following language : " thus it appears that the annual expenditure of the dioptric fixed light is £88 3s. 8d. less than that of a fixed light composed of twenty-six reflectors ; and the light given out is three times more powerful, while at the same time it is more equally diffused over the horizon."

Afterwards, a committee of the Royal Society, appointed to co-operate with the commissioners of northern lights, met in October, 1836, to examine the new dioptric light on the Isle of May, and to compare it with the old catoptric light near it. The observations were made at a distance of thirteen miles ; and the committee report that the following conclusions seem to be warranted :

" 1st. That at a distance of thirteen miles, the mean effect of the new light is very much superior to the old light, (perhaps in the ratio of two to one.)

" 2d. That at all distances the new light has a prodigious superiority to the old one, from the equality of its effects in all azimuths.

" 3d. That the new light fulfils vigorously the conditions required for the distribution of light to the greatest advantage.

" 4th. That at distances much exceeding thirteen miles, the new light must still be a very effective one, though to what extent the committee have not observed. The light is understood to be still a good one when seen from Edinburgh, a distance of about thirty miles."

The learned and distinguished Dr. Brewster, after examining the subject fully, holds this language : " hence it follows that the lens apparatus is in every respect better and more economical than the reflector apparatus ;" and again, " the lens apparatus is far more intense than the reflector apparatus of the same size ; with the same intensity of light, it consumes much less oil ; in reference to original cost, repairs, and renewals, it is more economical ; it requires a less expensive light-room, and demands much less time and trouble from the keeper, while it possesses the property (which reflectors never can have) of admitting every variety of resource in cases which demand extraordinary illuminations."

The committee find at page 72, Senate document 138, present session, an extract from a French document, which has in it the following language : " From numerous experiments made comparatively on several apparatus of the old and new system, it is satisfactorily demonstrated that a given quantity of oil employed in the illumination of light-houses, (lenticular,) gives *from three to four times* more useful light, that is transmitted horizontally, than if this same quantity of oil was consumed for illumination of the best apparatus with reflectors."

The committee might add much more concurrent testimony from equally reputable sources, tending to prove the superiority of the French system; but being satisfied with this, they forbear enlarging on this head, and will now consider what is necessary to constitute an effective system.

1st. The sites for light-houses and light-boats should be selected with great care and judgment, for the illuminated point should be that which earliest and most certainly indicates the danger to be avoided, and affords the safest guide along the channel. Nautical and hydrographical knowledge is obviously essential to a successful discharge of this duty. There is much reason for believing that many errors have been committed in the United States by the selection of improper sites; and it is said that some lights have been extinguished for this reason.

2d. The houses should be made of incombustible materials, and of such elevation above the level of the water as to be seen far enough to admonish the navigator before he falls into peril. They should be of a form adapted to the apparatus to be employed for illumination.

3d. The kind of light should be such as to enable navigators to identify it at first sight from all others. This is of the first importance, as any mistake in the recognition of a light is quite as likely to end in disaster as safety. The committee have heard complaints on this head, that our lights are in some places either too numerous, or not so distinctly characterized as to be readily distinguished from each other. It is well known, that at several points on the coast, no less than five or six, or perhaps even more, may be seen by a vessel at the same time; and though, doubtless, they are generally readily known by those to whom they are familiar, yet others have found themselves embarrassed.

In the description given by the French Government of their light-houses in 1837, the committee find the following account of their means of discrimination: "The fires of the light-houses and watch-lights may be arranged according to their distinctive characters in three principal classes, namely: fixed lights, eclipsing or revolving lights, or those which alternately appear and disappear, lights varied by great brightness, preceded and followed by short eclipses.

"1st. The fixed lights differ only in their greater or less intensity, with the exception, however, of the little red light on the northeast stockade of the port of Boulogne.

"2d. The eclipsing lights, called, also, revolving lights, offer no very marked differences except in the duration of their phases. They are produced regularly, at intervals which vary from half a minute to two minutes and three quarters.

"The bright light or flashes, (eclats,) which alternate with eclipses in the lights of this kind, acquire, at the end of some seconds, their maximum of intensity, and decrease afterwards by the same gradations.

"When we are sufficiently near a revolving light, its eclipses no longer appear to be total, as we perceive, in the interval between the flashes, a light of much less intensity.

"3d. The lights varied by great brightness belong exclusively to a particular kind of lenticular light-houses. The longest period of the appearance of the light of this apparatus, presents a flash more or less brilliant, which, after a certain interval of time, gradually grows weaker. To this decrease of light (which, to the observer, placed at a sufficient distance, becomes a *total eclipses*,) succeeds, during some seconds, a bright light, much

superior to the first. This great bright light afterwards decreases, and the fixed light re-appears.

"The changes in the appearance of the light take place regularly, at intervals which vary from two to four minutes, according to the disposition of the apparatus."

From this and other statements, the committee infer that the French avoid the use of colored lights, because white lights are supposed, in a fog, to appear so discolored as to mislead the navigator, and to rely wholly on white lights, which are fixed or revolve, and are eclipsed or send out flashes at regular intervals, some longer and some shorter, but each having a length of interval different from all others; and, therefore, is identified by the time, as well as the brightness or feebleness of the flash, according to the power of the light. The committee have heard of no practical inconvenience from this arrangement, though it is obviously less distinctive and marked in its character than colors.

On this point Mr. Stevenson remarks, that "as the sole object in establishing a light is to make known to the benighted mariner the land he has made, with as much certainty as the sight of a hill or tower would show him his position during the day, it becomes an object of the first importance to impress upon each light a distinctive character, which shall effectually prevent the possibility of its being mistaken for another."

The leading characteristic distinction in the Scotch lights is color. They employ, in all, six classes, namely: Fixed, revolving white, revolving red and white, flashing, intermittent, and leading lights; alleging that in practice they meet with no inconvenience or perplexity in the employment of colors.

The committee have been thus minute on this head, because it is obvious that, however perfect lights may be, they can be of little practical utility unless readily identified; and it is equally plain that those which assimilate in character or appearance should be placed as remote from each other as possible.

4th. The power of lights should be proportionable to the distance at which they ought to be visible, to give early notice to the navigator. Those first seen, in approaching the coast, should usually be of the first class, as they constitute the outer range, and are sea lights. Those upon the close waters may be of sizes proportioned to the object to be attained, as they serve as guides into harbors and along our bays, sounds, and inlets, through which our vast coasting trade passes. These waters, like great streets, may be so lighted that vessels of all classes may pursue their voyages by night as well as by day. Indeed, those most frequented are now so lighted that steamers and coasters run with safety by night; and thus the traveller is expedited, and the duration of voyages lessened.

5th. The oil should be of the first quality; and we cannot too vigilantly guard against the introduction of inferior qualities, for with such, it will be in vain to hope for intense light from the best apparatus. The French use vegetable, while we use sperm, oil.

6th. The keepers should be persons of untiring fidelity and vigilance, as on the prompt and faithful execution of their duties depends the lives and property of their fellow citizens. They should have a perfect knowledge of the apparatus, and all the most approved methods of keeping it in the most effective order. These are very important considerations, for, if cleanliness be neglected, or it be suffered to get out of order, ordinarily the intensity of the light is impaired, and, consequently, its usefulness.

7th. The lights should be frequently visited by a general inspector who is master of the whole subject, being fully capable of estimating the true character of the apparatus, its condition, the manner in which it is managed, whether the keepers are capable and faithful, and whether the oil is such as it should be. In a word, this visiter should be so thoroughly skilled in every thing pertaining to the subject, as to keep the light-houses in as perfect a condition as the arts and the progress of science will allow. This great and important duty in France has hitherto, it is understood, devolved upon the secretary and chief engineer of the Commission de Phares ; and to the late Mr. Fresnel, who filled that office, we owe a debt of lasting gratitude, as a common benefactor. We have already said certain collectors of the customs are the inspectors of the light-houses within their respective districts. It is manifest the two offices have no natural connexion, for they require qualifications quite dissimilar. The one should understand the laws of light, as it is affected by reflectors and refractors ; the other, the character and value of merchandise. And there is no affinity between the employments ; nor does it follow that one who is well qualified for a collectorship has a particle of that information which is essential to a well conducted system of lights. Again, the number is great ; this duty is merely collateral ; their visits are seldom ; their attention little engaged in the matter. They have no control over the system, have no knowledge beyond their districts, and the consequence is, that their inspection is generally of little importance, and has little tendency to expose the faults or improve the character of the system. Indeed, so necessary is some other inspection, that the contractors who furnish oil are required to view and report upon the condition of each light, and so also are the immediate keepers. The subject was early committed to the supervision of the collectors, as a matter of convenience ; but we may well inquire now, whether its importance does not call for a more skilful supervisor ; one that can give harmony and character to the whole system, and make it not only keep pace with the progress of population and business, but with the advancements of mechanical and scientific improvements.

Such are the general outlines of what the committee consider essential to an effective system of light-houses, light-boats, beacon-lights, &c., and it will be perceived from the course of remark, that the committee believe ours may be improved both in lights and in organization.

The committee are disposed, however, to attribute these results more to improvident legislation, and the want of suitable legal provisions, than to any other cause ; but they believe that this is as favorable a moment as any which will occur to begin reformation. The great lake coast is pressing heavily for improvements, as well as the southern Atlantic coast, which greatly needs more and better lights. The track from our commercial cities to the mouth of the Mississippi has become a vast highway, bearing upon its intricate channel, which is beset with storms and currents, a trade of great magnitude, which is destined to go on increasing. It is a matter of high importance that light should be scattered along this track, and that the perils of navigation should be lessened by all suitable measures within our power. New light-houses have been and will continue to be demanded in this direction, and they ought to be of the most improved kind.

The committee are satisfied from the evidence before them, derived as it is from the most authentic and respectable sources, that the lenticular ap-

paratus is the best in use ; but, to test the matter, and place the truth or falsity of the statements beyond all doubt, they recommend an appropriation sufficient to import two sets of the first class of apparatus, to be placed at two of the most important points on the coast, where navigators may at once decide upon their character as compared with the old lights; and, also, one apparatus of the second class, to be put up at some point also to try its merits.

The committee would further recommend as a preparatory step to a better organization of the whole system, that the coast be divided into such districts as the President may deem convenient for the purpose, and that a sufficient number of naval officers be detached to survey and examine the light-houses, light-boats, beacon-lights, buoys, &c., and to report upon their present condition and usefulness, and also what improvements in their judgment the public emergencies demand. It is desirable, if convenient, that two officers at least should be assigned to each district; and that each board, after having made the survey and examination, shall also suggest modifications in the future organization of the light house system, if in their opinion any change is expedient.

To carry into effect these measures, the committee request their chairman to move the subjoined as an amendment to some appropriation bill making provision for objects that harmonize in their general character with this

AMENDMENT.

Fifteen thousand dollars to enable the Secretary of the Treasury to import two sets of dioptric, or the most improved lenticular, apparatus of the first class, for light-houses, and one set of the second class; and to place them in light-houses where their value, as compared with the apparatus now in use, may be most speedily and effectually tested by the observation of navigators. And, to the end that Congress may be furnished with more exact information in regard to light-houses and the light-house system, the President shall appoint such a number of naval officers as, in his judgment, is necessary to survey and examine the Atlantic and lake coasts, whose duty it shall be to report upon the present condition and usefulness of the light-houses, light-boats, beacon lights, buoys, &c., designating such further and additional works and improvements as the public emergency most urgently demands; and, also, whether the public interest demands any, and, if any, what, modification of the system to render it more effective and useful: and the President shall, if he sees fit, divide the coast into districts, assigning such officer or officers to each district as he thinks proper, always assigning two to each district if the public service will allow of it, and each board shall report as above provided.

The subjoined letter from the Fifth Auditor of the Treasury, though promptly furnished, did not reach the committee until this report was drawn up. They, however, annex it with pleasure, as it is derived from an authentic source, but they find nothing in it which renders any modification of the report necessary:

TREASURY DEPARTMENT,
Fifth Auditor's Office, May 3, 1838.

SIR: I had the honor, this morning, to receive your note of the 30th ultimo, requesting me to state, for the information of the Committee on Commerce of the Senate, what has been the system of erecting, managing, and illuminating our light-houses, and what the organization now is.

It is with great pleasure I proceed to give the committee the information desired.

The first act passed in relation to the light-houses of the United States, after the adoption of the constitution, appears to be that of the 7th August, 1789, which assumed the expense of all those existing in the United States at the time, upon condition that the several States in which they were situated ceded them, with jurisdiction, to the United States by a given day; and that act charged the superintendence and management of them thenceforth upon the Secretary of the Treasury. On the 8th May, 1792, however, the office of Commissioner of the Revenue was established, and the superintendence and management of the light-houses, &c., were assigned to him by the Secretary of the Treasury.

The office of commissioner being abolished on the 6th April, 1802, the Secretary of the Treasury, Mr. Gallatin, resumed the superintendence of the light-house establishment, in whose hands it continued until the re-establishment of the office of Commissioner of the Revenue on the 24th of July, 1813. From this period, this officer was charged with the superintendence of the establishment until the 1st July, 1820, when the office was a second time abolished, under a law of 23d December, 1817, in relation to the internal revenue, and all the duties appertaining to the office, including those of superintending and managing the light-house establishment, were assigned to me by the Secretary of the Treasury. It then consisted of 55 light-houses and a few buoys; it now consists of 210 light-houses and 28 light-ships, with numerous buoys, monuments, &c.

The Secretary of the Treasury, as well as the two Commissioners of the Revenue, erected such light-houses as were authorized, by contract, first advertising for proposals, and giving the contract to the lowest bidder. A collector of the customs was designated as superintendent, both in regard to building and repairing light-houses, within a particular district, and, as a compensation, he was allowed two and a half per cent. on his disbursements. He inspected the buildings after they were finished, or sent a person for that purpose, and did not employ an overseer of the work, day by day, as I have caused to be done in all cases of buildings since 1820.

Down to the year 1812, oil was provided annually by the Treasury, kept in stores, and sent to the light-houses by the collectors as it was wanted. Spider lamps were employed in the light-houses, which consumed a vast quantity of oil without affording much light. The waste of oil by this mode of using it, with that by leakage at the custom houses, was so great, added to the dimness of the lights, as to induce Mr. Winslow Lewis to turn his attention to the subject, with a view to producing economy, and, at the same time, a better light. His patent lamp and reflector was the result. On perfecting them, he proposed to Congress to sell to the United States the patent right, which he had obtained, for the saving of oil of one year, as used in the old mode. A law was accordingly passed in 1812, and a contract entered into with him by Mr. Gallatin, Secretary of the Treasury, for fitting up all the light-houses with his lamp and reflector, the saving from

which, it appears, was 24,000 gallons of oil in one year, the consumption by the old mode being 48,000 gallons in about 49 light-houses then built. The light-houses being thus fitted up, Mr. Lewis proposed to receive a certain quantity of oil annually, with a specific sum of money for transporting it to the light-houses, and for supplying wicks, tube glasses, &c., and to obligate himself to keep them all lit, and the apparatus in good repair. To this the Secretary of the Treasury assented. Mr. Lewis, in this manner, kept the light-houses lit until they were transferred to me.

Since I took charge of the establishment, collectors have been designated, as formerly, to act as superintendents, allowing them two and a half per cent. on their disbursements, not to exceed \$400 per annum. There are in all 44, a few of whom receive the limit, but in a great majority of cases they do not receive a compensation of \$100 for this service. Notwithstanding the smallness of the compensation, they perform this duty satisfactorily. When a light-house is to be built within the district of any one of them, he is ordered to select the proper site, is furnished with a plan of the building by this office, and is directed to employ a suitable mechanic to see that the materials are good, and the work well done. On the certificate of the overseer to this effect, payment is made, but not otherwise. The superintendent is required, also, to make at least one visit a year (in June, when it can be done) to each of the light-houses in his district, and to report to me the condition of each. If repairs are required, they are ordered, and there is sufficient time, after June, to make them in each year. On this duty, the expenses only of the superintendent are paid. In this manner new buildings are well and substantially made, and the old promptly and effectually repaired.

Finding that the mode of lighting the light-houses adopted by Mr. Galatin, of supplying a certain quantity of oil and money, to Mr. Lewis, without advertising for proposals, was liable to objection, I determined to advertise for proposals to supply all the necessary oil, of the best quality, wicks, tube glass, buff skins, &c., and to keep all the apparatus in complete repair, for a given sum of money per lamp per year; the contract to continue in force for a period of five years.

It was required, also, of the contractors to visit all the light houses annually, and report their condition to me. They were particularly to specify all the repairs which were required, to report the state of the apparatus, and the conduct of the keepers. A power was reserved in this office, in case this duty was neglected, of revoking the contract. In this manner I have made contracts, from time to time, with persons to keep the light-houses lit up, of the last of which I herewith enclose a printed copy. By this it will be perceived that the sum paid is \$35 87 per lamp per annum, for supplying every thing necessary for lighting.

The keepers are, on their part, at the close of each year, to report the quantity of oil and other things received from the contractors during the year, the quantity and kind on hand, and the state and condition of the apparatus. If the oil is not good, or the apparatus is out of repair, they are instructed to report the same to the proper superintendent, who requires good oil to be supplied, and the apparatus to be repaired.

One inconvenience and injury to the service I have experienced, from our present mode of fitting up new light-houses, by giving the contract to the lowest bidder. In building light-houses, we are bound by law to advertise for proposals to fit them up, according to Winslow Lewis's patent

lamp and reflector; but, as many of the persons bid, and some of them get the contract, who have never seen Winslow Lewis's reflector, they put up reflectors of a different kind, which is not discovered, probably, for some years afterwards. The consequence is that, instead of getting reflectors which will show a light 20 to 25 miles, we get those which can be seen 10 or 12 miles only. To remedy this evil, I would respectfully suggest the propriety of authorizing this office, by law, to contract with the patentee for fitting up all light-houses which may be hereafter built, with his lamp and reflector, if he will engage to do it on reasonable terms. In case he will not undertake the service, on terms deemed reasonable, then the office shall advertise for proposals, and give the contract to the lowest bidder; the lamp and reflector to be subjected to the inspection and approval of the patentee, in every case.

I consider the present arrangement for managing the light-house establishment of the United States the most simple and the most economical that can be devised, and, at the same time, sufficiently effectual. But it is now a mere Treasury arrangement, and ought to be recognised and established by law. The collectors are designated to act as superintendents, without any authority of law, and might refuse to execute the duty if a control was not held over them by means of their collectors' offices. They should be bound by law, or at least such of them as may be designated by this office, in concurrence with that of the Secretary of the Treasury, to act as superintendents of lights, under the direction of this office, with a compensation to be fixed by law.

It is not known to the public who has the general superintendence of the light-house establishment. It is generally believed to be in the hands of the Secretary of the Treasury, who has, in fact, but little to do with it. I would respectfully propose, therefore, that the name and the style of the office should hereafter be "The Auditor for the Department of State and General Superintendent of the Light-house Establishment." The powers and duties of the Auditor may remain as fixed by the law of the 3d March, 1817; but those of the light-house establishment ought to be in a general way, at least, defined by law.

The light-houses are now all fitted up with the parabolic reflectors, by law. If any change be made, it must be by law. Should Congress think proper to make an appropriation of five or six thousand dollars, to procure a set of the French lenses, I will cause the utility of them to be tested, in comparison with the reflector, and report the result to Congress; after which they will act upon the subject as they shall think proper.

In my reply to the Blunts, of New York, I took some notice of the manner in which the light-house establishments of England and France were conducted. To that communication I respectfully refer the committee.

I have the honor to be,

Very respectfully, sir,

Your very obedient servant,

S. PLEASANTON,

Fifth Auditor and Act. Com. of the Revenue,

Hon. JOHN DAVIS,

United States Senate.

CIRCULAR TO SUPERINTENDENTS OF LIGHT-HOUSES.

TREASURY DEPARTMENT,
Fifth Auditor's Office, February 15, 1838.

SIR: Messrs. Charles W. Morgan & Co.'s contract for keeping the light-houses and beacon lamps supplied with oil, &c., having expired at the close of the last year, a contract has been entered into with Charles W. Morgan, William R. Rodman, and Edward Merrill, of New Bedford, for keeping the respective light-houses and beacon lamps supplied with oil; and for keeping in good repair all the lamps, reflectors, and apparatus, fitted in the light-houses and beacons, and also for supplying them with a sufficient quantity of wicks, tube glasses, buff skins, and whiting; a copy of which is annexed for your guidance and information.

To insure the faithful execution of this contract, your attention is respectfully requested to the following objects:

In case there should at any time be a deficiency in the quantity of oil, or other articles, it will be the duty of the keepers to advise you of the circumstance, and of yourself to advise this office, and also to inform the contractors.

Agreeably to the 2d and 3d articles, the contractors are, at their own cost, to keep in repair all the lamps, reflectors, and apparatus, oil butts, heaters, clock work, &c., and to supply all the tube glasses, wicks, buff skins, and whiting. Every expense, therefore, relative to those objects, must be paid by them.

To carry the provisions of the 9th article into effect, the keepers must keep accurate statements of the time during which the lights may be suspended, and transmit them to the superintendents, in order that they may be included in their annual reports to this office.

From the information furnished by the quarterly reports to you, of the keepers, and such other as may be at your command, you will be pleased, on the 1st of January, in each year, to make out and transmit to this office a statement of the preceding year, which shall specify the quantity and kind of oil on hand at its commencement; the quantity and kind of oil received during the year; the quantity and kind consumed during the year; and the quantity and kind remaining on hand at the close of the year; the character and condition of the oil, when received from the contractors, and at the date of the last report of the keeper; the number of lamps, lenses, and reflectors in the light-house; the time during which, and the cause for which, any of the lamps may not have been used, with their number, and also the number of tube glasses, wicks, and buff skins on hand at the commencement of the year, the number received and used during the year, and the number remaining on hand at the close of the year.

You will be particularly careful to require the contractors to fulfil their engagements, in all respects, in relation to the light-houses under your charge, and in case of default on their part, you will state the fact without

delay to this office. You will likewise state your opinion of the conduct of each keeper, and will admonish them from time to time of the importance of strict attention to their duty.

I have the honor to be, respectfully,
Sir, your obedient servant,

Fifth Auditor, and Acting Commissioner of the Revenue.

COPY OF ARTICLES OF AGREEMENT,

Made on the eighth day of December, in the year of our Lord one thousand eight hundred and thirty-seven, between Stephen Pleasonton, Fifth Auditor of the Treasury of the United States, and Acting Commissioner of the Revenue, of the one part, and Charles W. Morgan, William R. Rodman, and Edward Merrill, all of New Bedford, in the State of Massachusetts, of the other part :

This agreement witnesseth, that the said Stephen Pleasonton, for and in behalf of the United States, and the said Charles W. Morgan, William R. Rodman, and Edward Merrill, for themselves, their heirs, executors, and administrators, have mutually covenanted and agreed as follows :

1. The party of the second part shall keep all the light-houses, now built in the United States, and all others that may be hereafter built and fitted up, agreeably to Winslow Lewis's patent lamps and reflectors as now used, together with the beacon lamps, supplied with a sufficient quantity of best spermaceti strained oil, for the consumption of the lamps, at their own expense, from the first day of April to the first day of December, and a sufficient quantity of best winter pressed oil, from head matter, from the first day of December to the first day of April, in each and every year, for and during the term of five years, from the first day of January, Anno Domini one thousand eight hundred and thirty-eight; the lamps to be lighted at sunset, and to be extinguished at sunrise, each and every night.

2. The party of the second part shall and will, at his own cost and expense, keep in good and complete repair, all the lamps, reflectors, and apparatus, fitted in the light-houses aforesaid, and all the oil butts, oil heaters, clock work, wick boxes, tube boxes, hand lanterns, cannisters, torches, oil feeders, oil carriers, frames, diamonds, &c., for and during the term of five years aforesaid, and shall deliver over, at the expiration of the term aforesaid, all the light-houses fitted up, with all the apparatus and articles above enumerated, to the United States, in good repair: *Provided, nevertheless,* If the said apparatus described in the above article be not in good repair (which shall be determined by the returns of the superintendents to the office of the Fifth Auditor) when the party of the second part takes possession of the same agreeably to the terms of this contract, said apparatus shall be put in good repair at the expense of the United States.

3. The party of the second part shall and will also, at his own proper cost and expense, supply all the tube glasses, wicks, buff skins, and whiting, which may be necessary for the consumption of the light-houses, for and during the term of five years aforesaid.

4. The United States shall pay to the party of the second part, in full satisfaction for the performance of the stipulations by them entered into as

aforesaid, at the rate of thirty five dollars and eighty-seven and a half cents, annually, for each lamp that is lit in the existing light-houses, amounting to the number of two thousand one hundred and forty-seven, per schedule hereto annexed, and a like sum for each lamp that shall be lit in light-houses that may hereafter be built, if they shall be lit an entire year, or a proportion of that sum, if they shall be lit only a part of the year, during the continuance of the five years aforesaid; the said sum to be paid to the party of the second part on the first day of April in each year, or as soon thereafter as may be during the continuance of this contract.

5. The party of the second part agrees to receive the quantity of oil remaining on hand at the several light-houses on the first day of January aforesaid: *Provided*, The same shall not exceed an average supply of eight months, and provided it shall be of good quality, to be determined by the returns of the several superintendents to the office of the Fifth Auditor, both of summer strained oil and winter pressed oil from head matter; and in lieu thereof, the party of the second part engages to return and place at the several light-houses the like quantity, quality, and kind of oil, so that there will be at each of the light-houses, at the termination of the five years, when this contract will expire, the same quantity of oil as was on hand at the said light-houses on the first day of January aforesaid, without any charge, cost, or expense therefor.

6. The party of the second part further agrees to receive all the tube glasses, wicks, buff skins, and whiting, which may remain on hand at the several light-houses on the first of January aforesaid, the quantity to be determined also by the returns of the superintendents, and to return or leave at each of the light-houses the same articles and quantity at the expiration of their contract, without demanding or receiving any compensation therefor.

7. The party of the second part shall visit and inspect the several light-houses, at least once a year, and render a statement of their condition to the Fifth Auditor and Acting Commissioner of the Revenue.

8. The keeper of each light-house may annually consume, for his household use, a quantity of oil, not exceeding twenty gallons, out of that delivered by the party of the second part, for the use of the light-houses, without any allowance or compensation being made to the said party of the second part therefor.

9. Whenever the light of the lamps of any light-house shall be suspended, a proportionate deduction for the time they may be so suspended shall be made from the sum of thirty-five dollars and eighty-seven and a half cents, to be allowed the party of the second part, annually, for each lamp.

10. The party of the second part shall not be liable for any losses that may happen in consequence of war between the United States of America and any other power, but he shall be answerable for all other losses; unless one or more of said light-houses be destroyed, in which event the party of the second part shall not be answerable for the property in said house belonging to the United States.

11. It is expressly agreed and understood that if the party of the second part shall fail to comply with any essential condition of this contract, the right is hereby reserved by the Fifth Auditor and Acting Commissioner of the Revenue to annul it at any time previous to the expiration of the five years aforesaid; in which case the party of the second part shall be accountable for all the injuries and losses that may arise in consequence thereof.

It is hereby provided that no member of Congress shall be admitted to any share or part of this contract or agreement, or to any benefit to arise therefrom.

In witness whereof, &c.

STEPHEN PLEASANTON,
Fifth Auditor.

CHARLES W. MORGAN,
WILLIAM R. RODMAN,
EDWARD MERRILL.

Signed and sealed by the party of the first part in the presence of us,

THOMAS MUSTIN,
JOSEPH THAW.

Executed by the party of the second part in presence of us,

LEMUEL WILLIAMS,
WILLIAM H. TAYLOR.

NEW HAMPSHIRE

MASSACHUSETTS

Boston
Nantucket
Nantucket beacon
Nantucket Harbor light
Tanner's island (two lights)
Tucker's island (two lights)
Tymon's island (two lights)
Cape Cod

Boston
Nantucket
Nantucket beacon
Nantucket Harbor light
Tanner's island (two lights)
Tucker's island (two lights)
Tymon's island (two lights)
Cape Cod

SCHEDULE of light-houses and beacons in the United States, with the number of lamps lighted in each on the 1st day of January, 1838.

Light-houses.							No. of lamps.
MAINE.							
Portland	-	-	-	-	-	-	15
Sequin	-	-	-	-	-	-	14
Whitehead	-	-	-	-	-	-	10
Franklin island	-	-	-	-	-	-	10
Wood island	-	-	-	-	-	-	10
West Quoddy head	-	-	-	-	-	-	10
Petite Menan	-	-	-	-	-	-	8
Pond island	-	-	-	-	-	-	8
Burnt island	-	-	-	-	-	-	10
Libby island	-	-	-	-	-	-	10
Monhegan island	-	-	-	-	-	-	10
Owls' Head	-	-	-	-	-	-	8
Moose Peake island	-	-	-	-	-	-	10
Martinicus rock (two lights)	-	-	-	-	-	-	14
Permaguid point	-	-	-	-	-	-	10
Dice's Head	-	-	-	-	-	-	10
Cape Elizabeth (two lights)	-	-	-	-	-	-	29
Baker's island	-	-	-	-	-	-	10
Hendrick's Head	-	-	-	-	-	-	8
Mount Desert rock	-	-	-	-	-	-	10
Brown's Head	-	-	-	-	-	-	8
Marshall's point	-	-	-	-	-	-	7
Goat island	-	-	-	-	-	-	7
Negro island	-	-	-	-	-	-	8
Fort point	-	-	-	-	-	-	8
NEW HAMPSHIRE.							
Portsmouth	-	-	-	-	-	-	11
White island	-	-	-	-	-	-	15
Whale's Back	-	-	-	-	-	-	15
Boon island	-	-	-	-	-	-	12
MASSACHUSETTS.							
Boston	-	-	-	-	-	-	14
Nantucket	-	-	-	-	-	-	14
Nantucket beacon	-	-	-	-	-	-	8
Nantucket Harbor light	-	-	-	-	-	-	5
Thatcher's island (two lights)	-	-	-	-	-	-	30
Baker's island (two lights)	-	-	-	-	-	-	29
Plumb island (two lights)	-	-	-	-	-	-	20
Cape Cod	-	-	-	-	-	-	15

SCHEDULE—Continued.

No. of lamps.	Light-houses.	No. of lamps.
MASSACHUSETTS—continued.		
Cape Poge -	-	11
Plymouth (two lights) -	-	12
Wigwam point -	-	6
Chatham (two lights) -	-	12
Scituate -	-	15
Race point -	-	10
Point Gammon -	-	7
Holmes's Hole -	-	10
Tarpaulin cove -	-	10
Bird island -	-	10
Long Island head -	-	11
Ten Pound island -	-	8
Billingsgate island -	-	8
Monamoy point -	-	8
Sandy neck -	-	10
Long point -	-	10
Edgartown -	-	10
Nobsque point -	-	10
Dumplin rock -	-	10
Gloucester point -	-	10
Gayhead -	-	10
Clark's point -	-	10
Cutter Hunk -	-	10
Straitmouth island -	-	6
Marblehead -	-	10
Ned's point -	-	11
RHODE ISLAND.		
Newport -	-	15
Watch Hill -	-	8
Point Judith -	-	10
Goat island -	-	8
Dutch island -	-	8
Warwick neck -	-	8
Nayat point -	-	6
Block island (two lights) -	-	18
Poplar point -	-	8
VERMONT.		
Juniper island -	-	10

SCHEDULE—Continued.

No. of lamps.	Light-houses.	No. of lamps.
CONNECTICUT.		
	New London - - - - -	11
	Faulkner's island - - - - -	12
	Lynde point - - - - -	7
	Five Mile point - - - - -	8
	Fayerweather island - - - - -	8
	Stratford point - - - - -	10
	Stonington - - - - -	10
	Norwalk island - - - - -	10
	Great Captain's island - - - - -	10
	Morgan's point - - - - -	10
NEW YORK.		
	Sandy Hook - - - - -	18
	Sandy Hook two beacon lights consume equal to - - - - -	13
	Eaton's neck - - - - -	12
	Sands's point - - - - -	11
	Old Field point - - - - -	10
	Fire Island inlet - - - - -	18
	Throg's neck - - - - -	11
	Stony point - - - - -	7
	Princess bay - - - - -	11
	Fort Tompkins - - - - -	12
	Neversink, highlands of, (two lights) - - - - -	31
	Coxsackie - - - - -	5
	Four Mile point - - - - -	6
	Stuyvesant - - - - -	5
	Saugerties - - - - -	5
	Montauk - - - - -	13
	Little Gull island - - - - -	14
	Plumb island - - - - -	10
	Buffalo - - - - -	14
	Fort Niagara - - - - -	9
	Galloo island - - - - -	15
	Oswego - - - - -	7
	Genesee - - - - -	10
	Sodus bay - - - - -	10
	Tibbit's point - - - - -	9
	Horse island - - - - -	8
	Ogdensburgh - - - - -	10
	Dunkirk - - - - -	13
	Stony point - - - - -	10

SCHEDULE—Continued.

No. of lamps.	Light-houses.	No. of lamps.
NEW JERSEY.		
Barnegat shoals	- - - - -	11
PENNSYLVANIA.		
Presqu' Isle	- - - - -	10
Presqu' Isle beacon	- - - - -	4
DELAWARE.		
Cape Henlopen	- - - - -	13
Cape Henlopen beacon	- - - - -	10
Cape May	- - - - -	15
Mahon's ditch	- - - - -	10
Bombay hook	- - - - -	10
Mispillion creek	- - - - -	6
Christiana creek	- - - - -	10
MARYLAND.		
Bodkin island	- - - - -	13
North point (two lights)	- - - - -	18
Thomas's point	- - - - -	13
Pool's island	- - - - -	13
Smith's island	- - - - -	10
Concord point	- - - - -	9
Cove point	- - - - -	13
Point Lookout	- - - - -	11
Lazaretto point	- - - - -	11
Clay island	- - - - -	10
Piny point	- - - - -	10
Turkey point	- - - - -	11
Little Watts's island	- - - - -	11
VIRGINIA.		
Cape Henry	- - - - -	15
Old Point Comfort	- - - - -	10
Smith's point	- - - - -	15
New Point Comfort	- - - - -	9
Smith's island	- - - - -	15
Back River point	- - - - -	10
Assateague island	- - - - -	11

SCHEDULE—Continued.

No. of lamps.	Light-houses.						No. of lamps.
NORTH CAROLINA.							
Bald Head	-	-	-	-	-	-	15
Federal point	-	-	-	-	-	-	11
Cape Hatteras	-	-	-	-	-	-	18
Pamptico point	-	-	-	-	-	-	10
Ocracoke	-	-	-	-	-	-	15
Cape Lookout	-	-	-	-	-	-	15
Roanoke marshes	-	-	-	-	-	-	10
SOUTH CAROLINA.							
Charleston	-	-	-	-	-	-	10
Racoon key	-	-	-	-	-	-	15
North island	-	-	-	-	-	-	7
GEORGIA.							
Tybee	-	-	-	-	-	-	15
Tybee beacon	-	-	-	-	-	-	6
St. Simon's island	-	-	-	-	-	-	6
Sapelo island	-	-	-	-	-	-	15
Beacons on Wolf island (two)	-	-	-	-	-	-	12
Cumberland island	-	-	-	-	-	-	14
OHIO.							
Sandusky	-	-	-	-	-	-	13
Grand river	-	-	-	-	-	-	9
Grand River beacon	-	-	-	-	-	-	4
Cleveland	-	-	-	-	-	-	11
Cleveland beacon-light	-	-	-	-	-	-	4
Turtle island	-	-	-	-	-	-	11
Port Clinton	-	-	-	-	-	-	8
Conneaut River beacon	-	-	-	-	-	-	4
Cunningham Harbor beacon	-	-	-	-	-	-	3
Huron River beacon	-	-	-	-	-	-	8
Black River beacon	-	-	-	-	-	-	
Ashtabula beacon	-	-	-	-	-	-	
LOUISIANA.							
Frank's island	-	-	-	-	-	-	30
S. point (on Gordon's island)	-	-	-	-	-	-	14
Point Defer	-	-	-	-	-	-	15
Pleasanton's island	-	-	-	-	-	-	10

SCHEDULE—Continued.

Light-houses.							No. of lamps.
FLORIDA.							
St. Augustine	-	-	-	-	-	-	10
Dry Tortugas	-	-	-	-	-	-	15
Sand Key	-	-	-	-	-	-	14
Whitehead point (Key West)	-	-	-	-	-	-	15
Pensacola	-	-	-	-	-	-	10
St. Mark's	-	-	-	-	-	-	15
St. John's river	-	-	-	-	-	-	14
St. George's island	-	-	-	-	-	-	13
MICHIGAN.							
Fort Gratiot	-	-	-	-	-	-	10
Otter creek	-	-	-	-	-	-	9
Bois Blanc	-	-	-	-	-	-	13
St. Joseph's river	-	-	-	-	-	-	11
Outer Thunder Bay island	-	-	-	-	-	-	11
Chicago	-	-	-	-	-	-	13
Pottawatamie	-	-	-	-	-	-	11
ALABAMA.							
Mobile	-	-	-	-	-	-	21
Choctaw point	-	-	-	-	-	-	11
MISSISSIPPI.							
Cat island	-	-	-	-	-	-	10
Pass Christian	-	-	-	-	-	-	8
Round island	-	-	-	-	-	-	11
Whole number	-	-	-	-	-	-	2,147

